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(71) Applicants (for all designated States except US): NATIONAL UNIVERSITY OF SINGAPORE [SG/SG]; 10 Kent Ridge Crescent, Singapore, 119260 Singapore (SG). AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH [SG/SG]; 10 Science Park Road, #01-01-03 The Alpha, Singapore Science Park 2, Singapore 117684 (SG).

(72) Inventor; and

(75) Inventor/Applicant (for US only): LIM, Sai, King [SG/SG]; Apt Block 601, #10-508, Bedok Reservoir Road, Singapore 470601 (SG).

(74) Agent: ELLA CHEONG MIRANDAH & APRUSONS PTE LTD; Robinson Road Post Office, P.O. Box 1531, Singapore 903031 (US).

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(54) Title: HEMANGIOBLAST PROGENITOR CELLS

(57) Abstract: The invention relates to isolated hemangioblast cells. Hematopoietic and endothelial cells are postulated to be derived from a common progenitor, hemangioblast. While hemangioblast has been isolated retrospectively during embryonic stem cell differentiation, it has not been isolated from embryos or from bone marrow. Prospectively stable clonal cell lines have been isolated from mammalian embryos, from embryonic stem cells and from mammalian bone marrow that can differentiate in vitro into tubular structures with both endothelial and hematopoietic markers such as CD34, CD31, Flk-1, TIE2, P-selectin, Sca-1, thy-1, CD45, and smooth muscle actin. Gene expression profiles in the undifferentiated and differentiated cells were consistent with endothelial and hematopoietic differentiation potential. Transplantation studies in isogenic or immunodeficient mice demonstrated that these cells were not tumorigenic. In an appropriate microenvironment, the cells incorporate into the vasculature and participate in hematopoiesis.

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